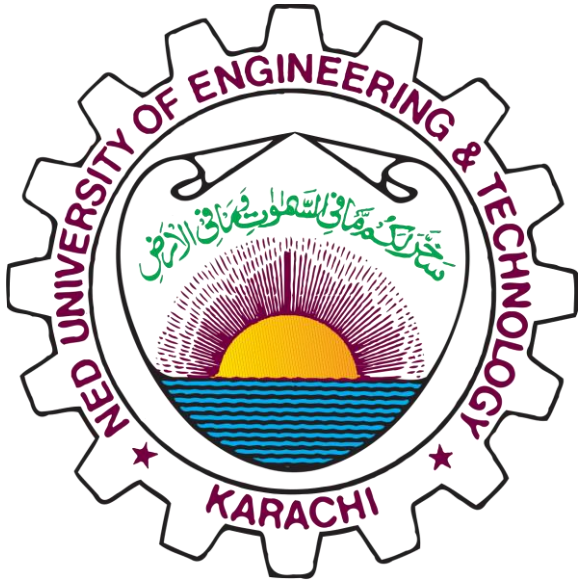
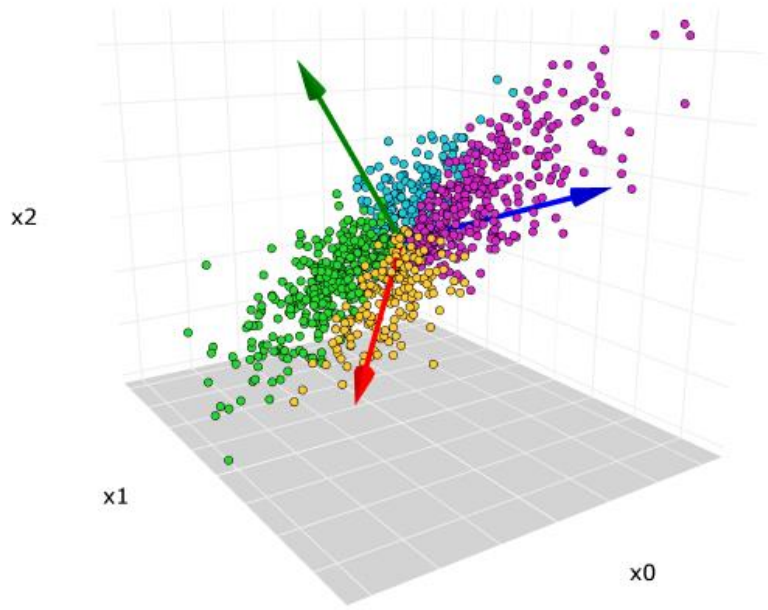


CT-562
MACHINE LEARNING

NED University of Engineering & Technology



PRINCIPAL COMPONENT ANALYSIS

PRINCIPAL COMPONENT ANALYSIS

Principal Component Analysis is an unsupervised learning algorithm that is used for the dimensionality reduction in machine learning. It is a statistical process that converts the observations of correlated features into a set of linearly uncorrelated features with the help of orthogonal transformation. These new transformed features are called the Principal Components. It is one of the popular tools that is used for exploratory data analysis and predictive modeling. It is a technique to draw strong patterns from the given dataset by reducing the variances.

PRINCIPAL COMPONENT ANALYSIS

PCA works by considering the variance of each attribute because the high attribute shows the good split between the classes, and hence it reduces the dimensionality.

EXAMPLE

	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Math	10	11	8	3	2	1
Physics	6	4	5	3	2.8	1
Chemistry	12	9	10	2.5	1.3	2
GK	5	7	6	2	4	7

EXAMPLE

	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Math	10	11	8	3	2	1

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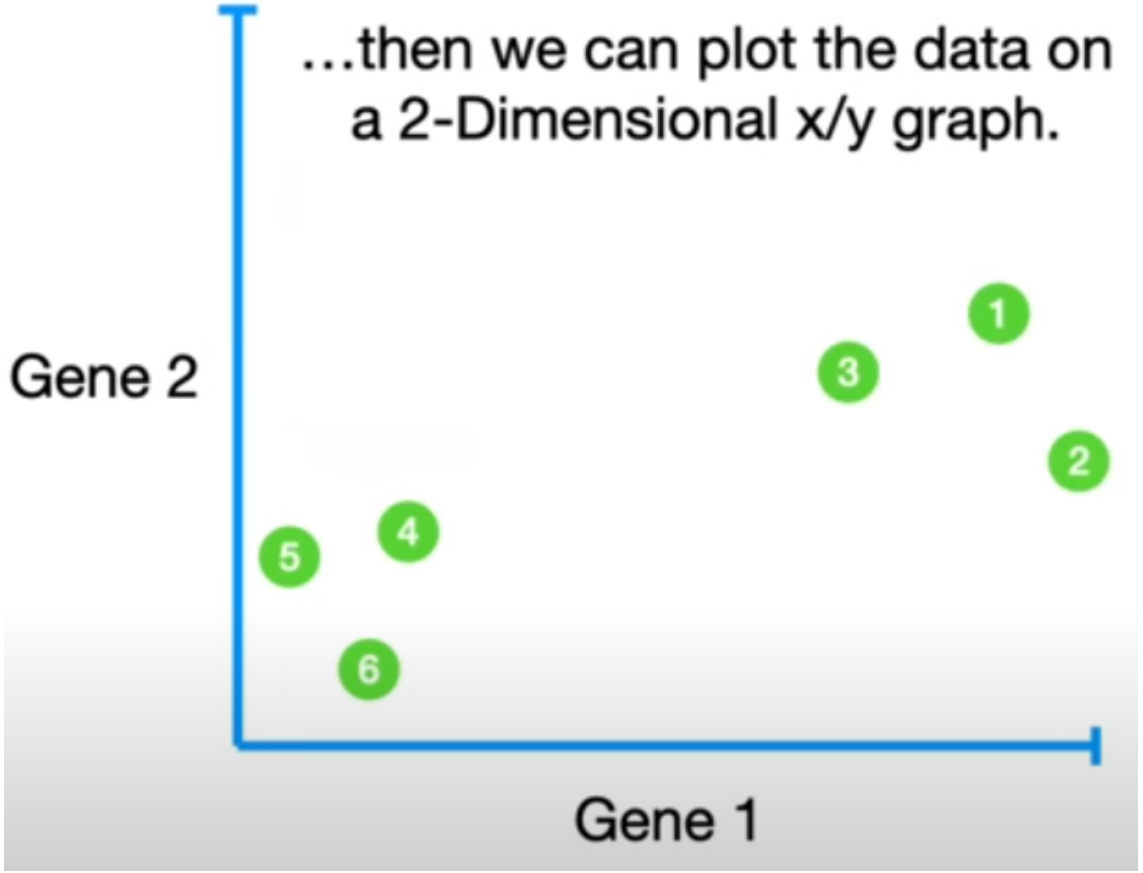

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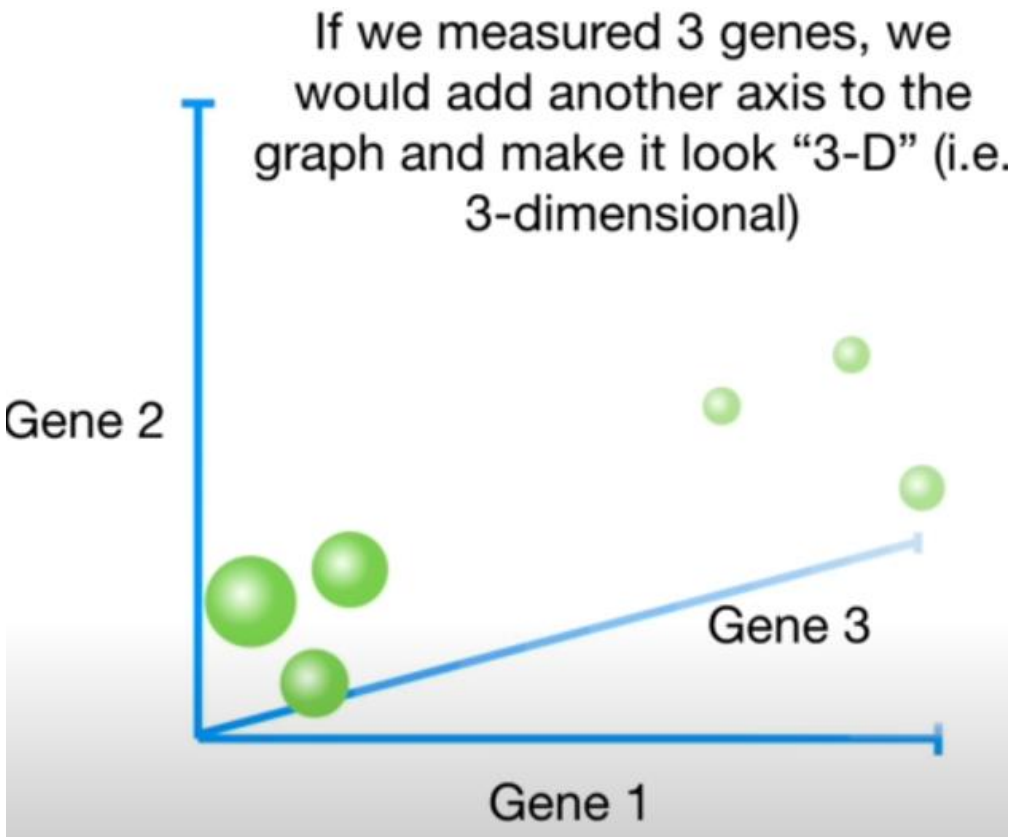

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If we measured 4 genes, however, we can no longer plot the data - 4 genes require 4 dimensions.

EXAMPLE

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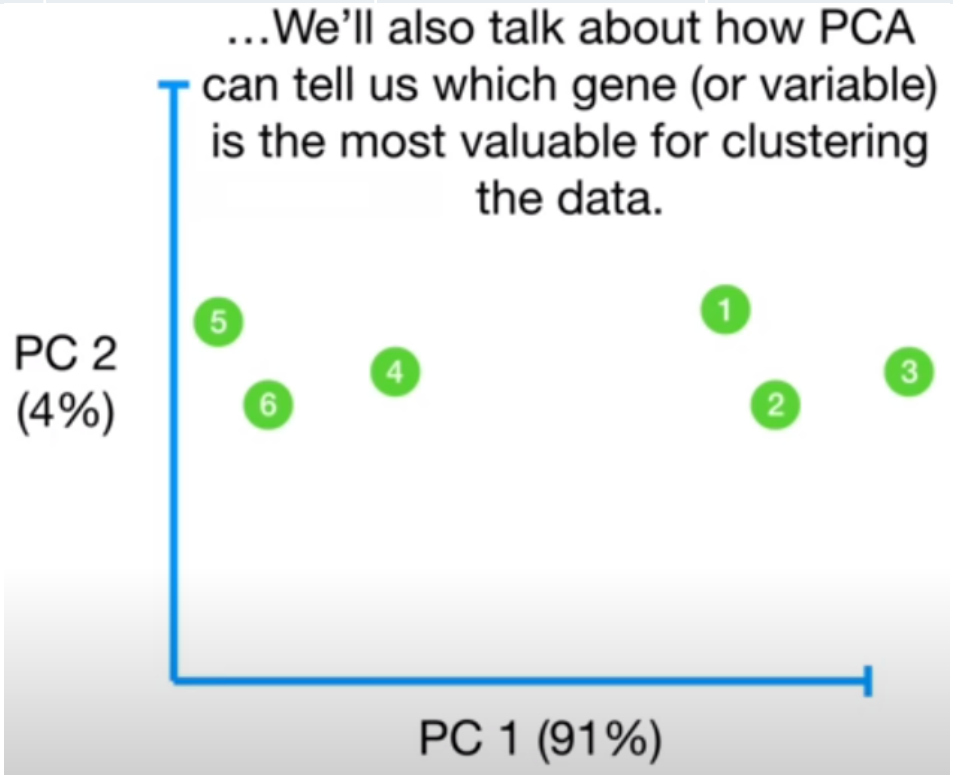

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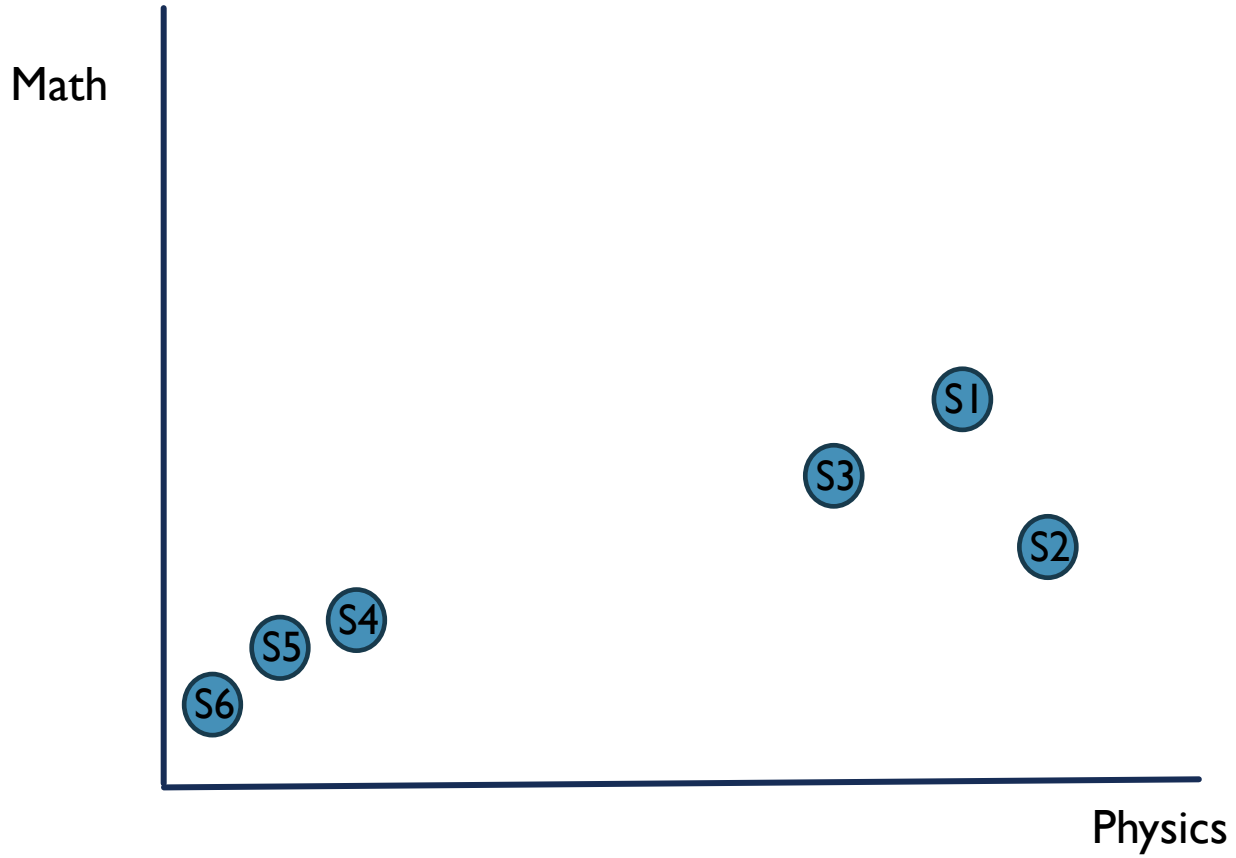

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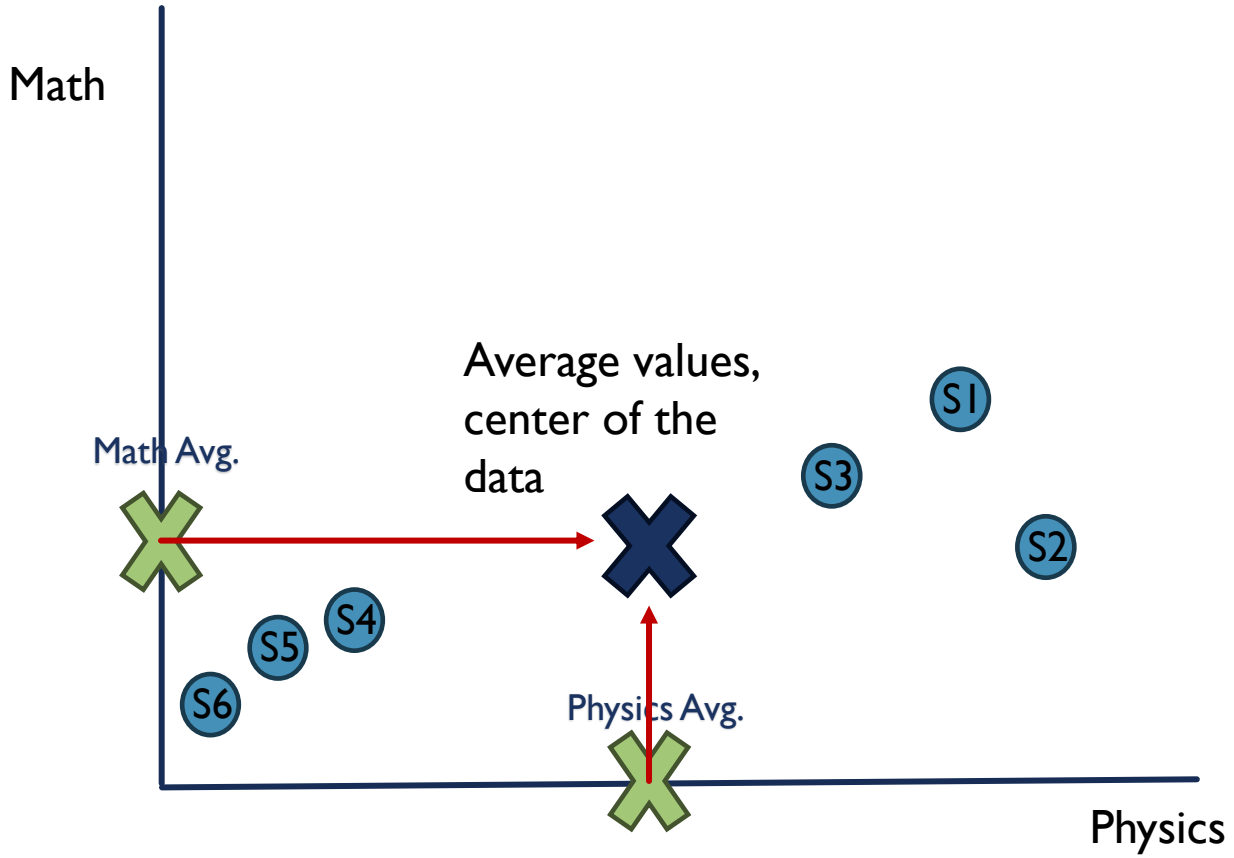

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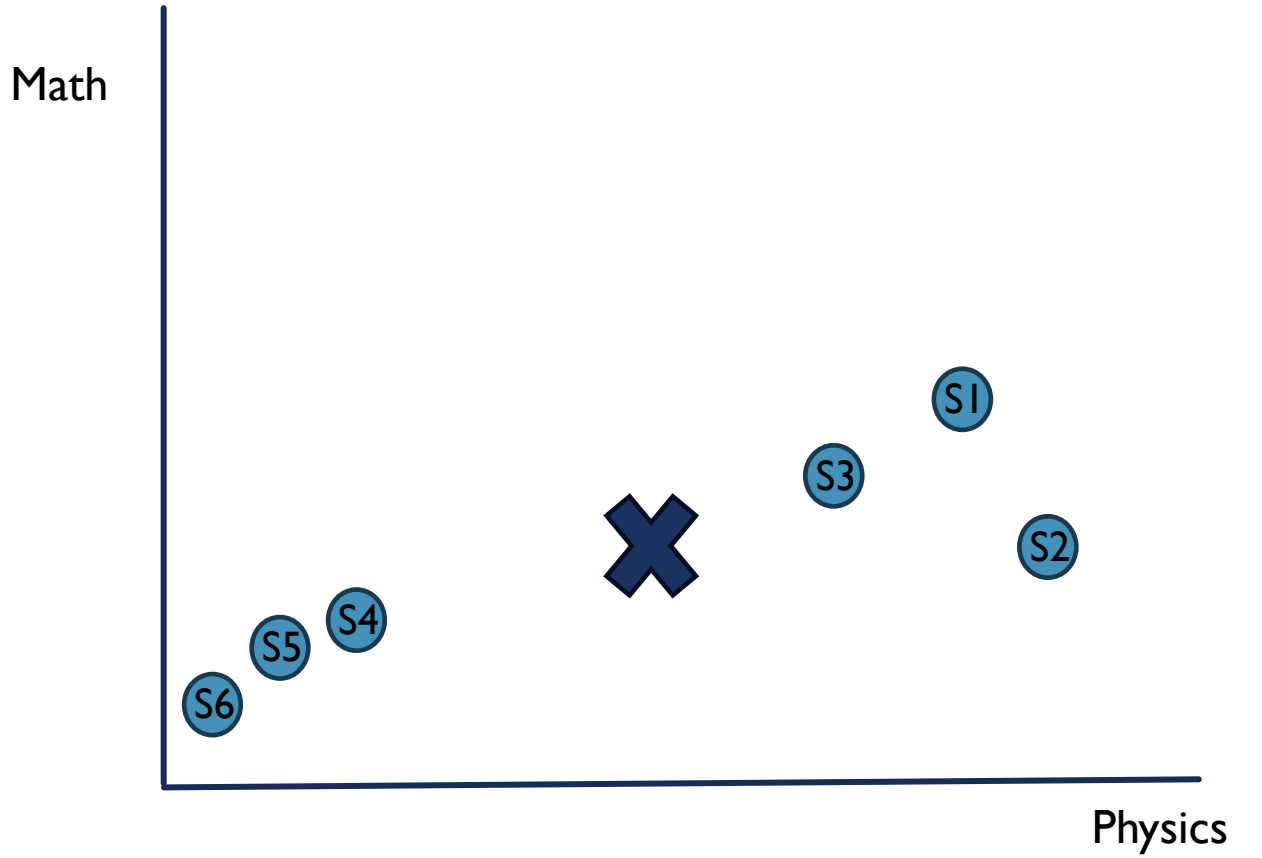
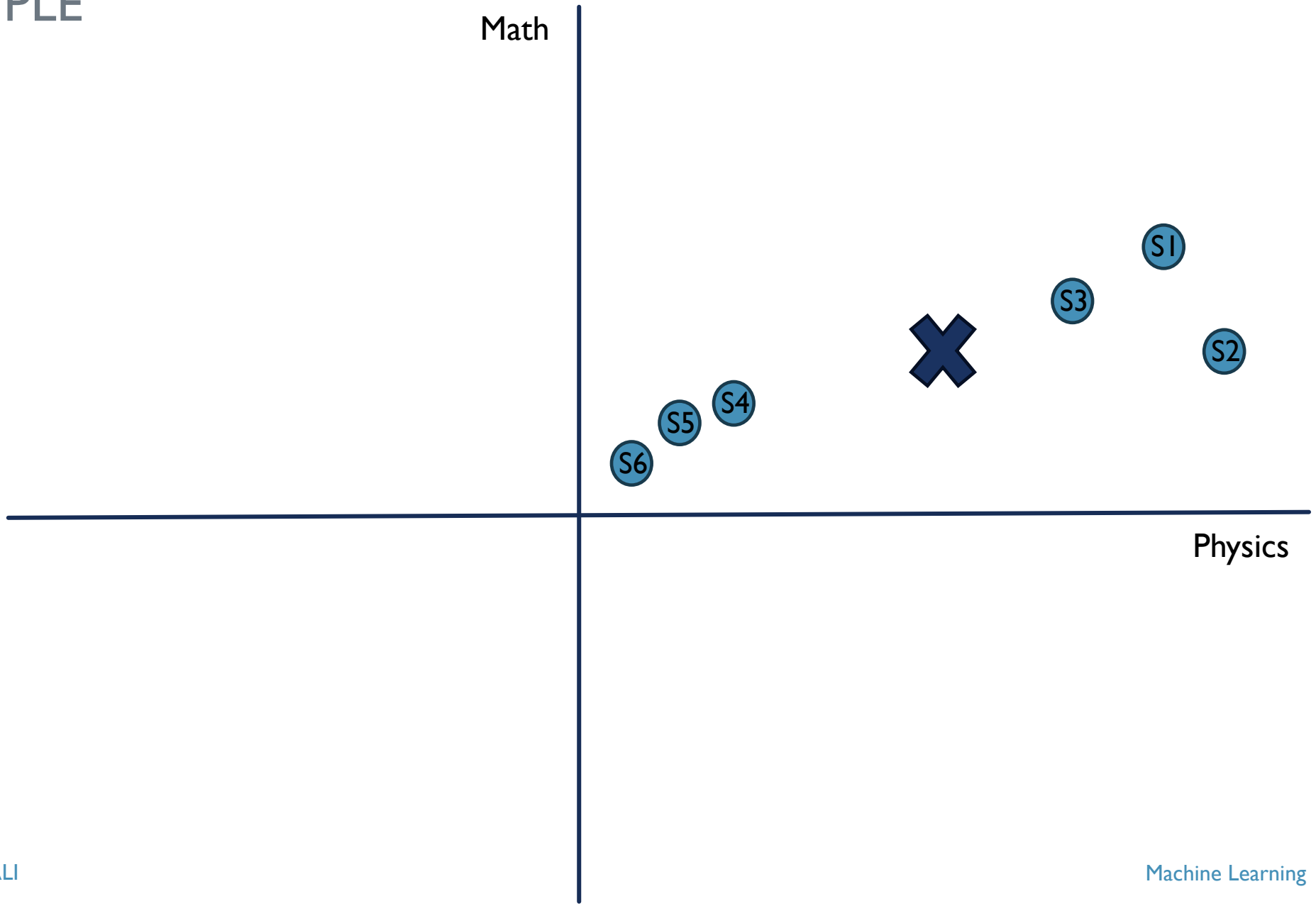
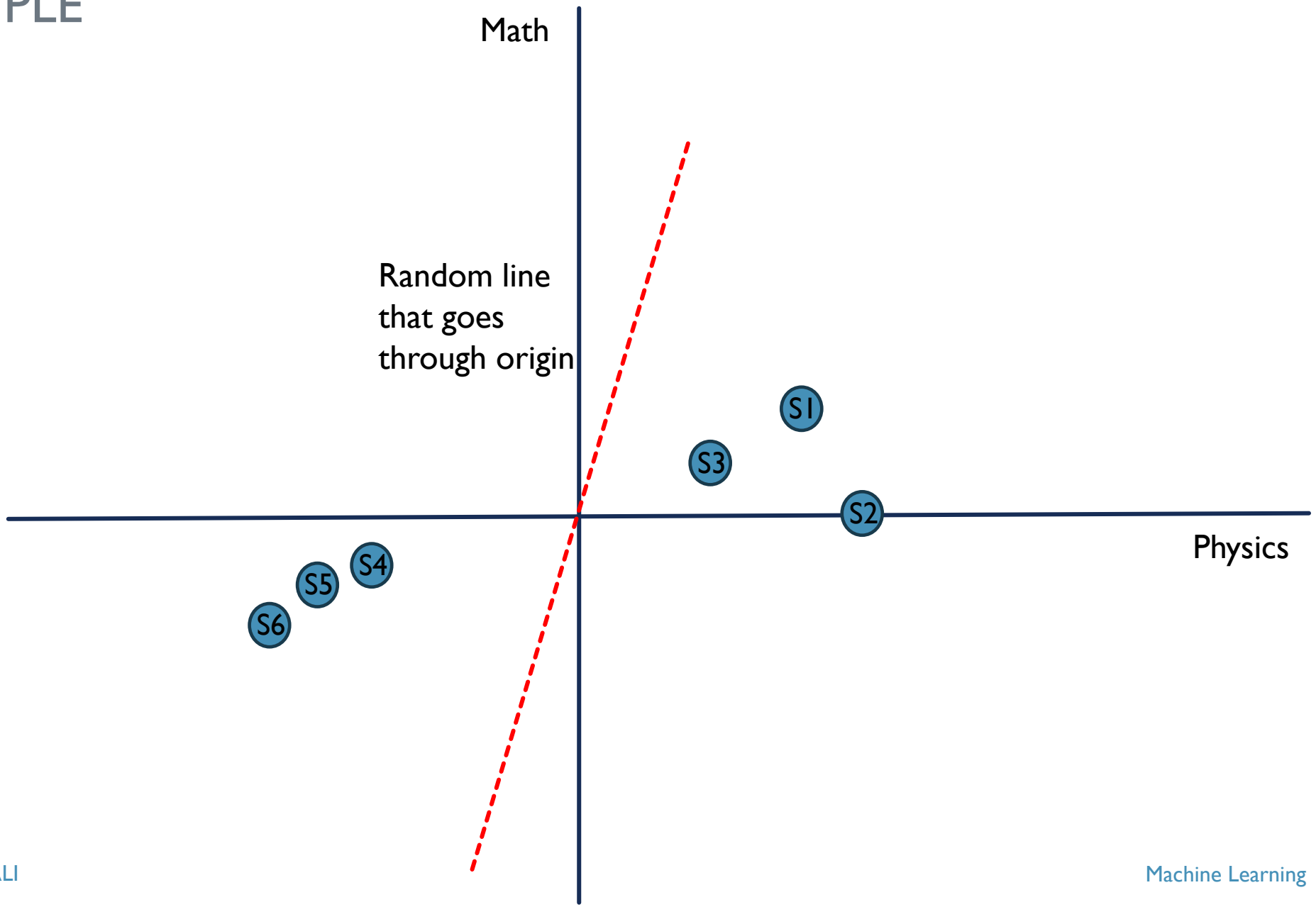


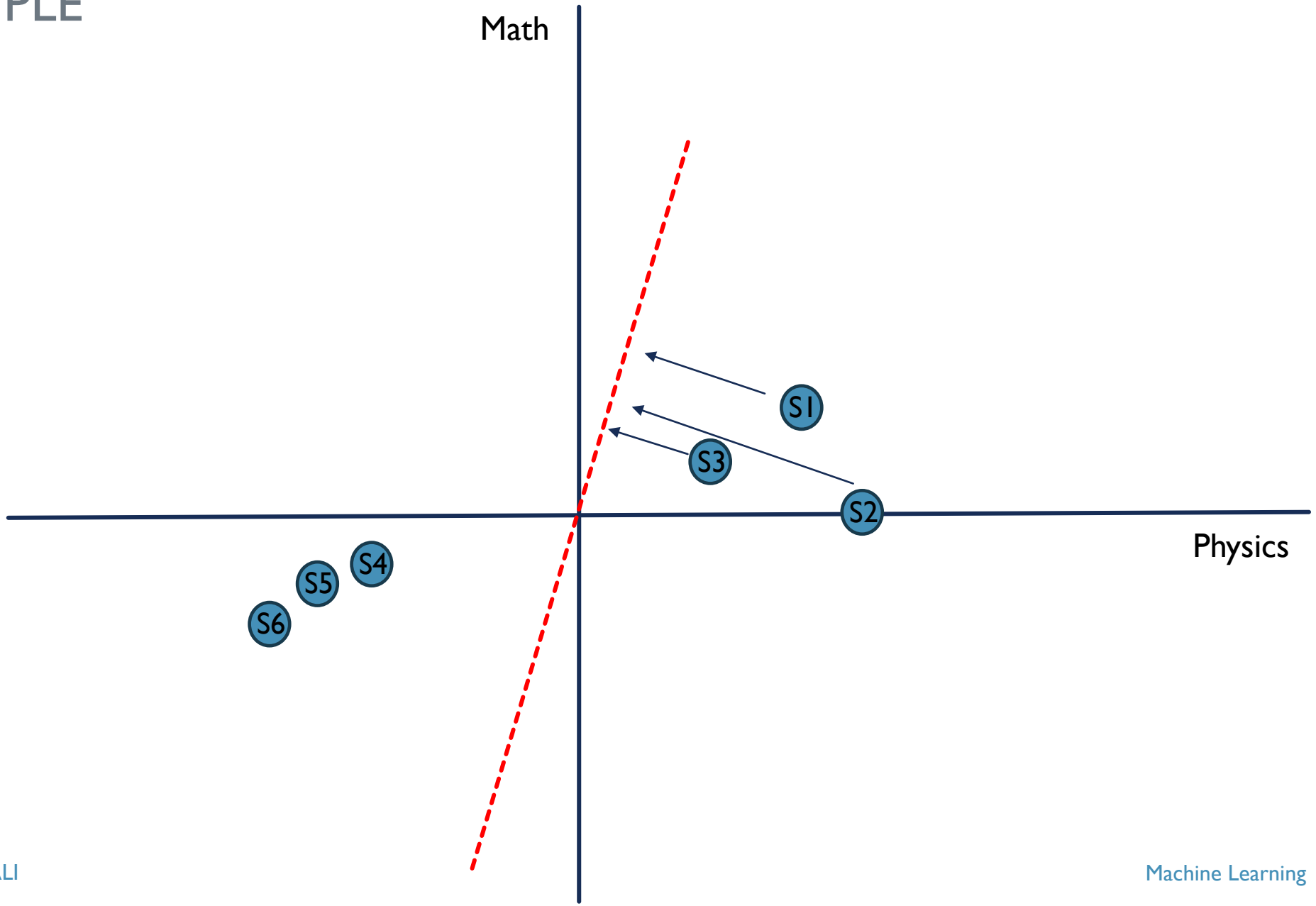
EXAMPLE



EXAMPLE


Math
Random line
that goes
through origin
S1
S3
S2
S4
S5
S6
Physics

EXAMPLE



MORE STEPS

- Check white board

THANK YOU